

Report No. BC/MB/04.19.04/2.

Site Investigation Report: Proposed New Club House at the Wern Sports Field.

Prepared on behalf of:

Merthyr Rugby Club.

By:



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Site Investigation Report: New Club House, Land at the Wern Sports Ground.

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Drawing No:		Scale:
BC/MB/04.19.04.01.	<i>General Location Plan.</i>	1:50,000.
BC/MB/04.19.04.02.	<i>Geology Plan.</i>	1:10,560.
BC/MB/04.19.04.05.	<i>Site Investigation Plan.</i>	1:1,000.

Appendix I

Graphic Logs, Boreholes 1-3.

Site Investigation Report: New Club House, Land at The Wern Spots Ground.

1 Introduction

This report has been prepared on behalf of our client:

***Merthyr Rugby Club,
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and relates to the Wern Sports Ground, Cae'r-Wen, Ynys Fach Estate, Merthyr Tydfil. It is proposed to construct a new club house. This report discusses the findings of exploratory drilling carried out for the proposed club house. Recommendations are made for a drilling and grouting programme to stabilise shallow mine workings encountered in the boreholes.

The following sources of data were used in the compilation of this report:

- i) *The findings of the Mining Risk Assessment: New Club House, Land at the Wern Club House, ref. no. BC/MB/04.19.04, published by Blandford Consulting;*
- ii) *The findings of the site investigation carried out at the Site and*
- iii) *the archive records of Blandford Consulting.*

The findings of this report are necessarily based upon the data used in its compilation and may be amended in the future in the light of additional material information. The report must only be used in its entirety for its stated purpose.

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2 Brief Description of the Site

The Wern Sports Ground is located on the western fringes of Merthyr Tydfil, approximately 600m south-west of the town centre; it is irregular in outline and occupies an area of approximately 0.26 hectares (see Figure 1 and *General Location Plan, drawing no. BC/MB/04.19.04.01*). The plot of land that is the subject of this report, 'the Site' is a rectangular area located at the north-eastern corner of the Wern Sports Ground; it has approximate maximum dimensions of 53m by 23m. The Wern Sports Ground is located in a residential area on the fringes of the town and is bounded on its western side by the A 470 (T), beyond which is open countryside. It is situated close to the floor of the Taff Valley and the Site is at an approximate elevation of 187m aod.

Figure 1
Aerial View of the Wern Sports Ground



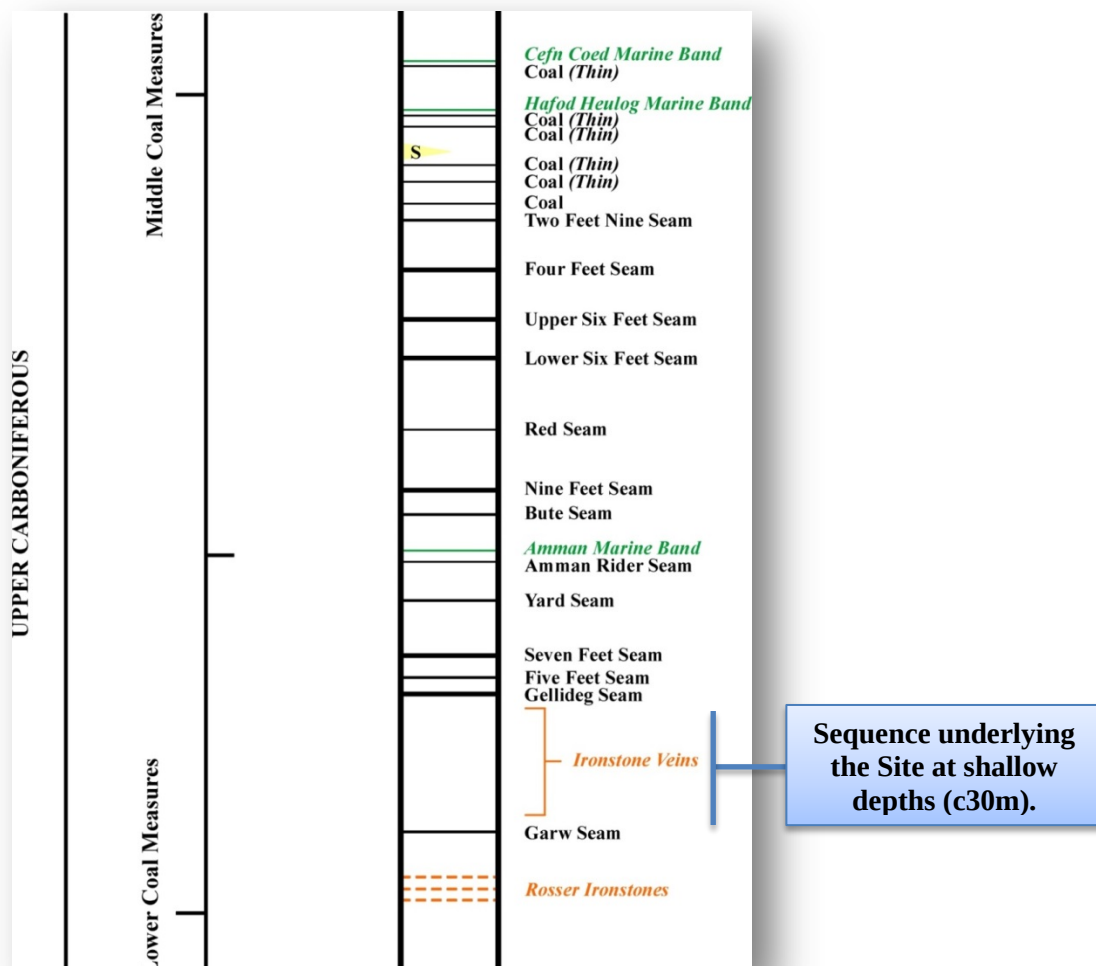
3 Geology of the Site

The Site is situated near the northern margin of the South Wales Coalfield and is underlain at shallow depths by strata assigned to the Lower Coal Measures, a sub-division of the

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Upper Carboniferous Period. The most recently published geological sheet at 1:10,560 scale (SO 00 NW) shows the inferred positions of the outcrop of the Five Feet and Gellideg Seams to be present beyond the south-west corner of the Site (see *Geology Plan, drawing no. BC/MB/04.19.04.02*). The next seam below the Gellideg Seam in the geological sequence is the Garw Seam; the interval between the two is approximately 30m. There are a number of ironstone bands within the coal measures lying between the two seams with two further ironstone bands, the Rosser Veins, present below the Garw Seam.

Figure 2
Part of the Stratigraphic Column.
 Scale: Not to Scale.



The coal measures of the South Wales Coalfield have been affected by large faults. In the Ynys Fach area these large faults have a slightly sinuous trace at the surface and an average

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trend towards the north-west. The published geological sheet indicates that the Site is not affected by large scale faulting.

The published geological sheet indicates that locally the coal measures are overlain with deposits of glacial boulder clay. Other ground investigations at the Sports Ground have identified the presence of Made Ground across much of the area. Published geological records indicate that the Site is not affected by landslip.

4 Mining History

The earlier coal mining risk assessment identified a risk of shallow mine workings being present beneath the Site in one or more ironstone veins and/or a coal seam. The report recommended drilling the exploration boreholes that are the subject of this site investigation report.

5 Site Investigation

5.1 Site Investigation Programme

A programme of three rotary percussive boreholes was planned for the Site; the boreholes were drilled to a maximum depth of 30m. The locations of the boreholes are shown on the *Site Investigation Plan, drawing no. BC/MB/04.19.04.05* and the borehole logs are included in Appendix I. The boreholes were supervised by a Chartered Geologist and drilled by Apex Drilling Services using a Beretta T44 rig. The boreholes were monitored for the presence of mine gases.

5.2 Findings of the Site Investigation: Rotary Boreholes

The boreholes were drilled on what is presently a car park and each of the three locations were started with a trial pit in order to avoid underground electric cables. At each location 400mm of tarmac was encountered with 500mm of fill beneath, interpreted as

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being sub-base. Below the fill all three boreholes encountered sand and gravel deposits that extended to a maximum depth of 7.3m in Borehole 3. Coal measures were proved to a maximum depth of 30m, no coal seam horizon was encountered.

Old workings were encountered in Boreholes 1 and 2; Borehole 3 encountered no old workings. In Borehole 1 old workings were encountered between 22.0m and 23.5m; the old workings were 'soft drilling' interpreted as being backfilled old workings. In Borehole 3 particularly hard drilling was encountered between 24m and 26m; this band of hard drilling is interpreted as being an ironstone vein and correlates with the old workings encountered in Borehole 1. It is generally accepted that the upward migration of mining voids chokes off where the thickness of strata is ten times the height of the original mining void (strata:void ratio of 10:1) and the process stops. The strata:void ratio for the above old workings is 10.3:1; the old workings are not likely to collapse to reach rockhead, where the coal measures are overlain with between 5m and 7m of sand and gravel deposits.

Borehole 2 encountered old workings between 15.0m and 17.3m; the workings were encountered as soft drill, broken ground and voids. The strata:void ratio for these workings is 3.6:1, posing a high risk of the workings collapsing to the surface.

The boreholes were monitored for mine gases throughout the drilling operations; the operations were monitored for the presence of methane, carbon monoxide, hydrogen sulphide and levels of oxygen outside the 20% - 21% range. None of the above mine gases were encountered and the readings of oxygen levels all fell within the above range.

6 Recommendations

Both sets of old workings encountered in the boreholes relate to ironstone veins. The upper set of old workings encountered in Borehole 2 poses a high risk of collapsing to the surface and it is recommended that they are stabilised by means of a drilling and grouting programme.

/Cont....

The lower set of old workings encountered in Borehole 1 do not pose risk of collapsing to rockhead.



**Dr Malcolm Blandford,
Chartered Geologist.**

Report Date: 19th August 2019.

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PLANS



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Study on Land at Merthyr Rugby Club Ground.

General Location Plan.

Plan Scale: 1:50,000.

Key to Symbols:



Approximate Position of Site.

Note:
North is at top of plan.

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Drawing No: BC/MB/04.19.04.01.



Study on Land at Merthyr Rugby Club Ground.

Geology Plan.

Plan Scale: 1:10,560.

Key to Symbols:

— Approximate Site Boundary.

Note:
North is at top of plan.

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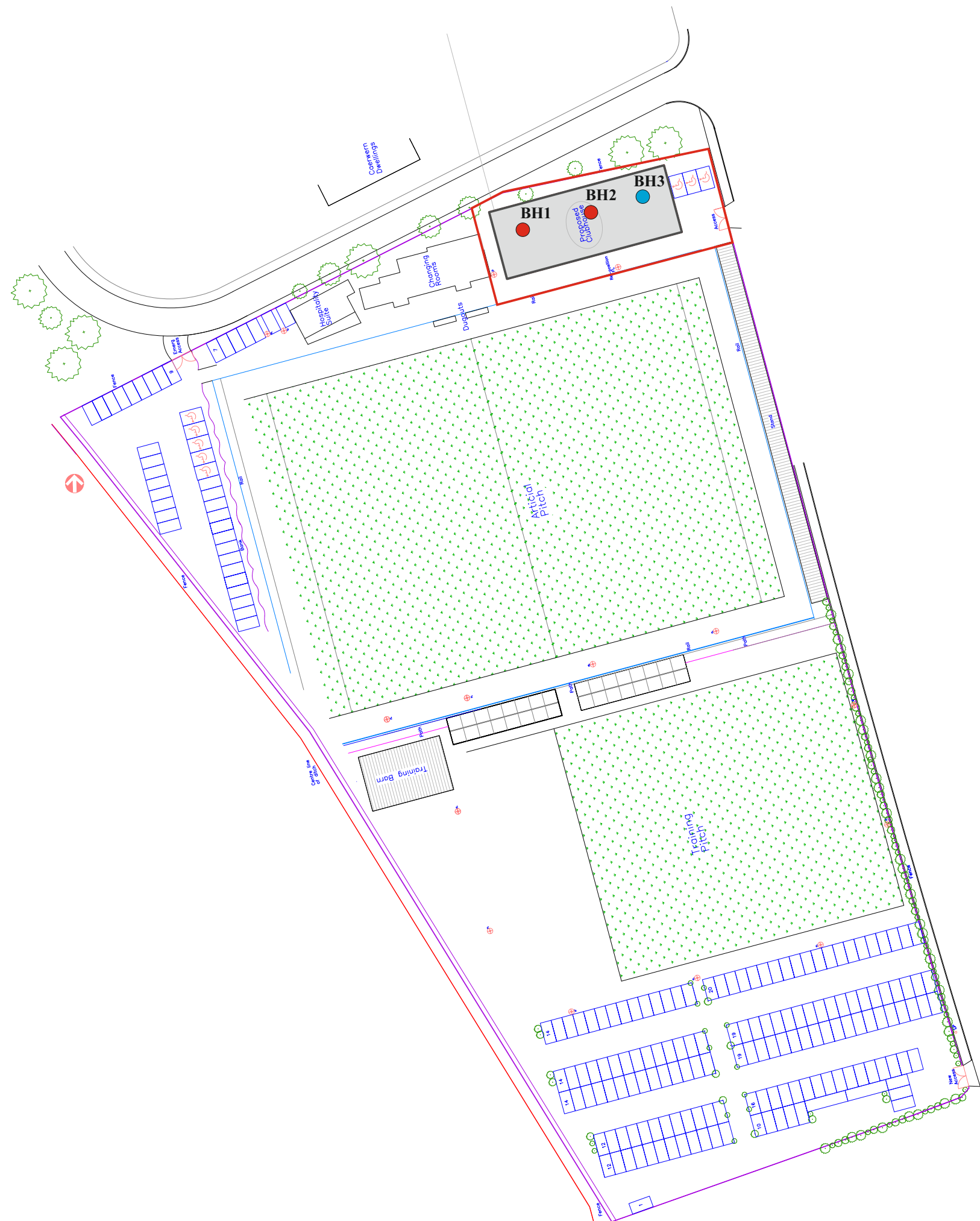


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Drawing No: BC/MB/04.19.04.02.





Study on Land at Merthyr Rugby Club Ground.

Site Investigation Plan.

Plan Scale: 1:1,000.

Key to Symbols:

- Approximate Position of Solid Borehole.
- Approximate Position of Borehole that Encountered Old Workings.

Notes:

North is at as shown on plan.

*Plan based on plan prepared by
Utopia Design Architectural Practice.*



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Drawing No: BC/MB/04.19.04.05.

APPENDIX I

GRAPHIC BOREHOLE LOGS



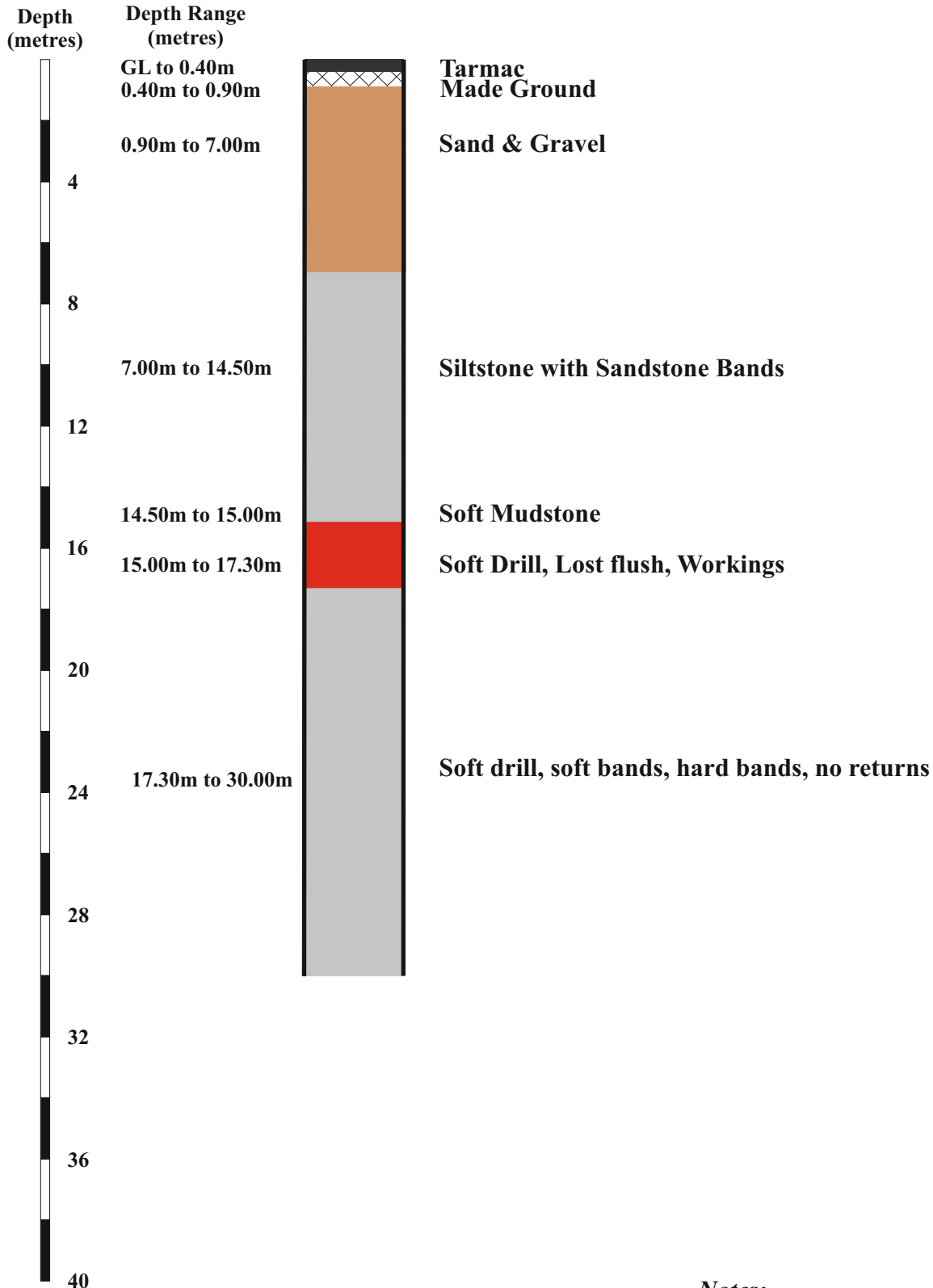
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South Wales,
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Study on Land at Merthyr R.F.C.

Borehole No. 1

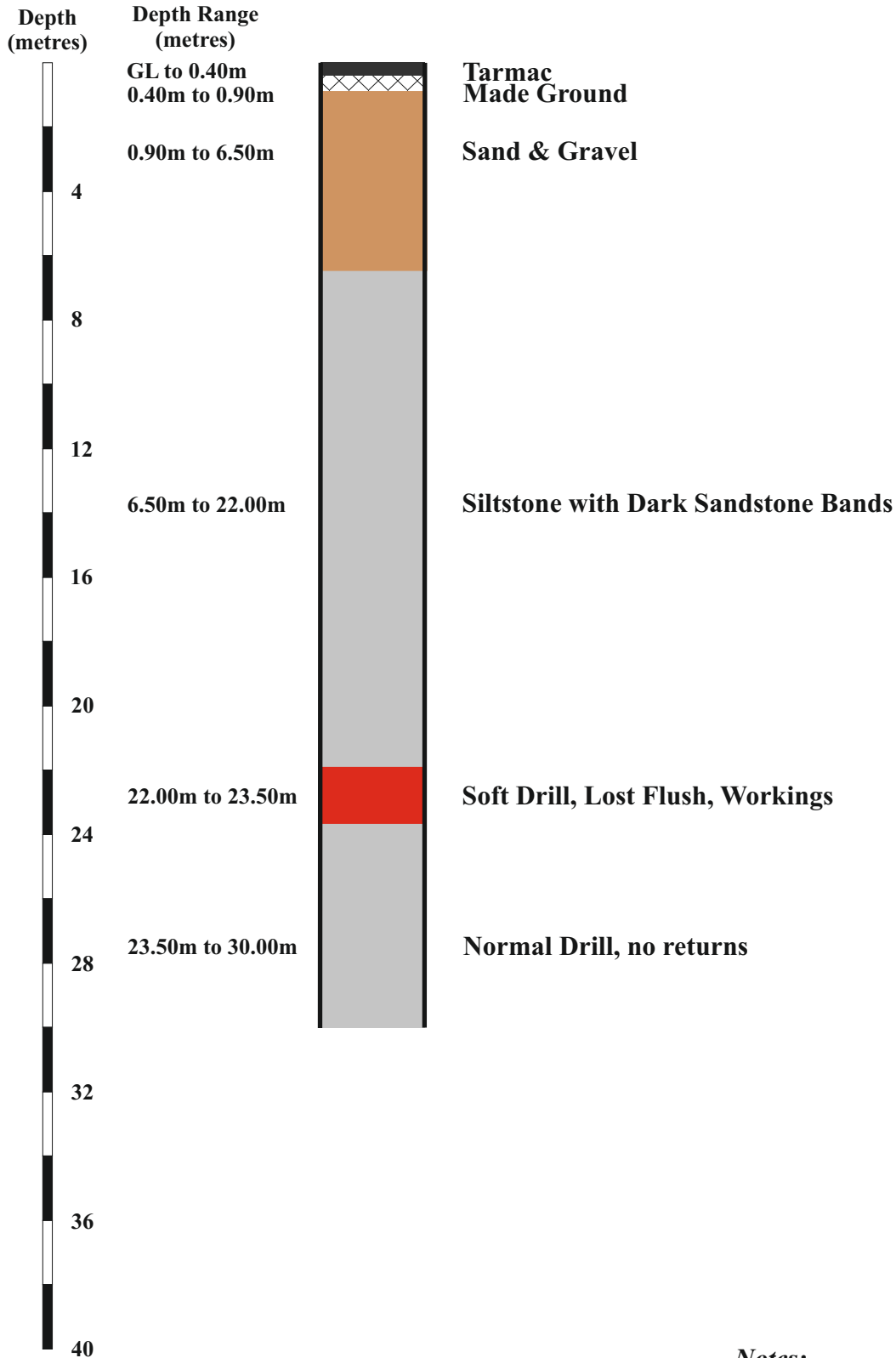


Notes:

1. Driller's Descriptions
2. Borehole dry.
3. Total depth of borehole, 30.00m.
4. Cased 7.5m.

Study on Land at Merthyr R.F.C.

Borehole No. 2

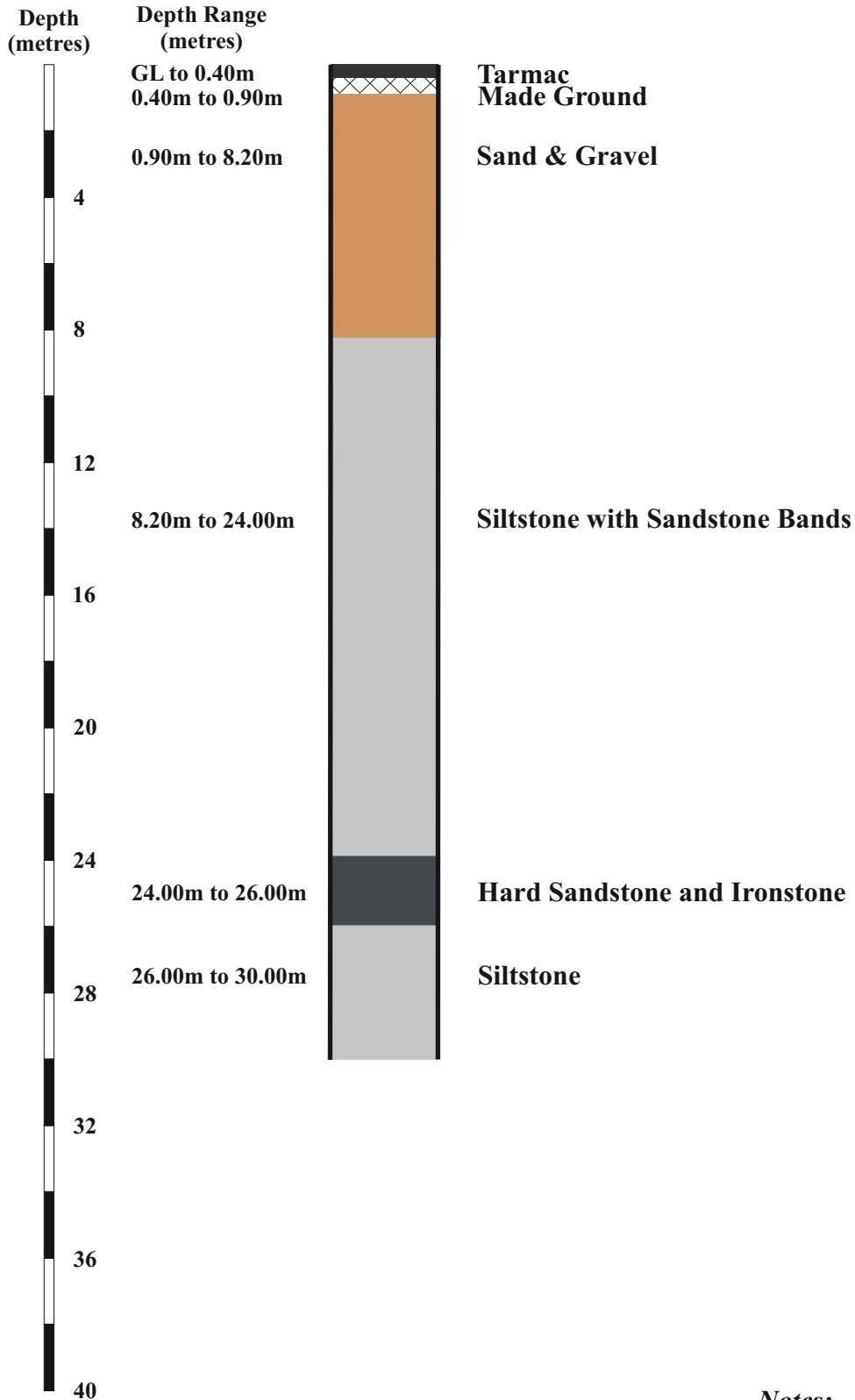


Notes:

1. Driller's Descriptions
2. Borehole dry.
3. Total depth of borehole, 30.00m.
4. Cased 7.5m.

Study on Land at Merthyr R.F.C.

Borehole No. 3



Notes:

1. *Driller's Descriptions*
2. *Borehole dry.*
3. *Total depth of borehole, 30.00m.*
4. *Cased 9.5m.*